

**APPENDIX F**  
**WATER-QUALITY**  
**DATA**

Table F1. Summary of Water Quality Data from Sampled Well at the BFF site

| Well Name | GWIC ID | Water Temp<br>(deg C) | Lab pH | Lab SC<br>(mS/cm) | TDS<br>(mg/l) | Ca<br>(mg/l) | Mg<br>(mg/l) | Na<br>(mg/l) | K<br>(mg/l) | HCO <sub>3</sub><br>(mg/l) | CO <sub>3</sub> *<br>(mg/l) | SO <sub>4</sub><br>(mg/l) | Cl<br>(mg/l) |
|-----------|---------|-----------------------|--------|-------------------|---------------|--------------|--------------|--------------|-------------|----------------------------|-----------------------------|---------------------------|--------------|
| BFF#4     | 260891  | 11.0                  | 6.87   | 1002              | 520           | 98.72        | 39.37        | 22.07        | 5.81        | 598.2                      | 0                           | <2.50 U                   | 0.9          |
| BFF#4     | 260891  | 11.6                  | 6.76   | 1155              | 521           | 98.70        | 38.44        | 18.85        | 5.09        | 591.6                      | 0                           | 1.200 J                   | 0.8          |
| BFF#3     | 260889  | 9.9                   | 9.36   | 377               | 152           | 2.14         | 7.31         | 53.84        | 0.88        | 113.9                      | 29.1                        | 1.100 J                   | 1.9          |
| BFF#1     | 260892  | 13.3                  | 7.55   | 389               | 231           | 45.24        | 18.85        | 13.25        | 1.61        | 276.1                      | 0                           | 4.6                       | 1.1          |
| BFF#5     | 317644  | 9.7                   | 7.87   | 330               | 230           | 36.60        | 9.16         | 34.91        | 1.28        | 221.1                      | 0                           | 1.030 J                   | 20.6         |

\*Note that CO<sub>3</sub> is reported as zero when pH is <8.2

| Well Name | GWIC ID | Fe<br>(mg/l) | Mn<br>(mg/l) | SiO <sub>2</sub><br>(mg/l) | F<br>(mg/l) | NO <sub>3</sub> -N<br>(mg/l) | NO <sub>2</sub> -N<br>(mg/l) | NO <sub>3</sub> +NO <sub>2</sub> -N<br>(mg/l) | Total N as N<br>(mg/l) |
|-----------|---------|--------------|--------------|----------------------------|-------------|------------------------------|------------------------------|---|------------------------|
| BFF#4     | 260891  | 10.742       | 0.110        | 46.9                       | 0.06        | 0.05                         | <0.05 U                      | 2.01  | 21.9                   |
| BFF#4     | 260891  | 16.402       | 0.148        | 50.6                       | 0.06        | 0.05                         | <0.01 U                      | <0.20 U                                       | 23.3                   |
| BFF#3     | 260889  | 0.011 J      | 0.005 J      | 0.08 J                     | 0.33        | 0.05                         | <0.01 U                      | <0.20 U                                       | <1.0 U                 |
| BFF#1     | 260892  | 0.003        | 0.001        | 10.1                       | <0.05 U     | 0.11                         | <0.05 U                      | 5.48  | 6.17                   |
| BFF#5     | 317644  | 7.185        | 0.265        | 11.2                       | 0.10        | <0.010 U                     | <0.01 U                      | <0.20 U                                       |                        |

| Well Name | GWIC ID | Al<br>(µg/l) | As<br>(µg/l) | B<br>(µg/l) | Ba<br>(µg/l) | Br<br>(µg/l) | Cu<br>(µg/l) | Li<br>(µg/l) | Mo<br>(µg/l) | Ni<br>(µg/l) | Pb<br>(µg/l) | Sr<br>(µg/l) | Zn<br>(µg/l) |
|-----------|---------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| BFF#4     | 260891  | 6.20 J       | 7.59         | 45.4        | 1705         | <50 U        | 0.58 J       | <10 U        | <2.5 U       | <2.50 U      | <1.00 U      | 323          | 19.12        |
| BFF#4     | 260891  | 28.32        | 15.39        | 72.1        | 1447         | 64           | 2.61         | <1 U         | <0.25 U      | 1.52         | <0.10 U      | 332          | 4.12         |
| BFF#3     | 260889  | 1.25 J       | 0.12 J       | 38.6        | 5            | 72           | 2.65         | 1.9          | 5.0          | 0.14 J       | <0.04 U      | 4            | 0.31 J       |
| BFF#1     | 260892  | 1.59 J       | 0.20 J       | 10.8        | 407          | <50 U        | 6.81         | 2.1          | <0.5 U       | 0.36 J       | 0.47         | 116          | 11.56        |
| BFF#5     | 317644  | <2.00 U      | <0.10 U      | 42.8        | 199          | 129          | <0.50 U      | 8.4          | 1.8          | <0.10 U      | <0.06 U      | 93           | 8.74         |

| Well Name | GWIC ID | Ga<br>(µg/l) | Nb<br>(µg/l) | Rb<br>(µg/l) | W<br>(µg/l) |
|-----------|---------|--------------|--------------|--------------|-------------|
| BFF#4     | 260891  | <2.5 U       | <2.5 U       | 2.37 J       | <2.5 U      |
| BFF#4     | 260891  | <0.25 U      | <0.25 U      | 2.07         | <0.25 U     |
| BFF#3     | 260889  | <0.10 U      | <0.10 U      | 0.33 J       | 0.17 J      |
| BFF#1     | 260892  | <0.10 U      | <0.10 U      | 0.75         | <0.50 U     |
| BFF#5     | 317644  | 7.4          | 0.78         | 0.46 J       | 0.67        |

Table F2. Water Isotope Results for Sites at and near BFF

| Well Name           | GWIC ID | Sample Date | $\delta^{18}\text{O}$ | $\delta\text{D}$ | Comments       |
|---------------------|---------|-------------|-----------------------|------------------|----------------|
| Boon (deep)         | 141562  | 9/29/2010   | -18.5                 | -144             |                |
| Boon (deep)         | 141562  | 6/15/1996   | -18.8                 | -139             |                |
| Mast (deep)         | 152923  | 6/24/2020   | -16.9                 | -128             |                |
| Mast (deep)         | 152923  | 9/8/2020    | -16.9                 | -127             |                |
| Brevik (deep)       | 80745   | 5/20/2000   | -17.5                 | -138             |                |
| Foster (deep)       | 152883  | 6/29/2010   | -18.4                 | -143             |                |
| Foster (deep)       | 152883  | 7/9/2019    | -17.8                 | -141             |                |
| Quigley (shallow)   | 318265  | 12/15/2021  | -18.5                 | -142             |                |
| Quigley (confining) | 318266  | 12/16/2021  | -19.3                 | -148             |                |
| Quigley (deep)      | 318263  | 12/15/2021  | -18.5                 | -140             |                |
| BF#2 (shallow)      | 139453  | 9/24/2010   | -16.4                 | -128             |                |
| Ottosen (bedrock)   | 80736   | 5/23/2017   | -17.0                 | -135             |                |
| BFF#5 (Tertiary)    | 317644  | 4/7/2022    | -21.7                 | -165             | MBMG           |
| BFF#5 (Tertiary)    | 317644  | 4/7/2022    | -21.1                 | -163             | Beta Analytics |

Table F3. Comparison of pMC and  $\delta^{18}\text{O}$  results with GWAA#2\*

| Study      | GWIC ID | latitude (dd) | longitude (dd) | TD (ft) | pMC  | $\delta^{18}\text{O}$ | HGU                |
|------------|---------|---------------|----------------|---------|------|-----------------------|--------------------|
| GWAA#2     | 81711   | 48.193126     | -114.073258    | 340     | 4.4  | -18.0                 | bedrock            |
|            | 130597  | 48.249100     | -114.480200    | 260     | 58.7 | -18.3                 | bedrock            |
|            | 86565   | 48.347503     | -114.404460    | 560     | 0.5  | -21.6                 | bedrock            |
|            | 141562  | 48.100425     | -114.180335    | 400     | 55.2 | -18.5                 | deep aquifer       |
|            | 82934   | 48.196028     | -114.374795    | 220     | 19.7 | -18.8                 | deep aquifer       |
|            | 137868  | 48.256100     | -114.263800    | 277     | 31.3 | -18.0                 | deep aquifer       |
|            | 87999   | 48.404400     | -114.250800    | 204     | 50.8 | -17.6                 | deep aquifer       |
|            | 80389   | 48.088900     | -114.035800    | 249     | 60.2 | -17.2                 | deep aquifer       |
|            | 85592   | 48.356900     | -114.210000    | 238     | 87.8 | -16.9                 | deep aquifer       |
| this study | 317644  | 48.103806     | -114.182175    | 1,560   | 2.9  | -21.1                 | Tertiary sediments |

\*Ground-water Assessment Atlas (GWAA) #2; LaFave and others, 2004